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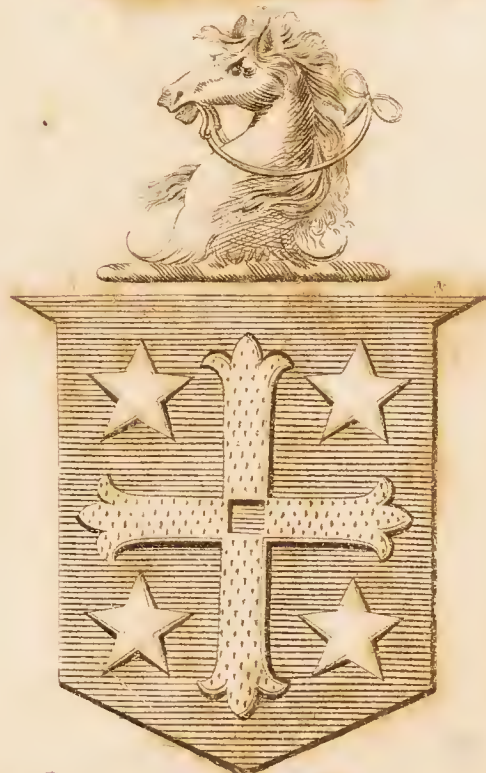
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1820

PRACTICAL OBSERVATIONS

ON THE

MEANS OF PRESERVING

THE HEALTH OF SOLDIERS.

PRACTICAL OBSERVATIONS
ON THE
MEANS OF PRESERVING
THE HEALTH OF SOLDIERS
IN CAMP AND IN QUARTERS.
WITH NOTES

ON THE
MEDICAL TREATMENT OF SEVERAL OF THE MOST
IMPORTANT DISEASES WHICH WERE FOUND TO PREVAIL
IN THE BRITISH ARMY DURING THE LATE WAR.

BY
EDWARD THORNHILL LUSCOMBE, M.D.

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UNIVERSITY OF DUBLIN, AND FORMERLY SENIOR SUR-
GEON OF THE 34TH REGIMENT OF FOOT.

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1820.

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ADVERTISEMENT.

THE author of the following pages, having served sixteen years in the medical department of the army, (twelve years of which he was Surgeon of the 34th regiment,) was induced, when about to take his degree of Doctor in Medicine at Edinburgh, in the year 1817, to select, as the subject of his inaugural dissertation, "The Means of Preserving the Health of Soldiers;" and when he appeared before the Senatus Academicus, for the purpose of defending his Thesis, he had the very great satisfaction to be told by the Professor to whose lot it fell to examine his essay, that he entertained such a favourable opinion of it, that he hoped to see it

published in another form. On the following day, the Dean of the Faculty of Medicine repeated to the author the wish which had been expressed in the *Senatus Academicus*, that he would give the public the result of his observations on the subject of his inaugural dissertation. To resist recommendations coming from such a quarter, was felt by the author to be quite impossible ; but he has delayed his publication for a considerable period, in the hope of being able to make his work, in some measure, worthy of such patronage, and, however inadequate it may be found, he can now safely declare, that his best endeavours have not been wanting.

In the style, his only object has been, to make himself clearly understood *in few words* ; he has, therefore, avoided all terms of art, which are exclusively familiar to professional readers, in those parts of his publication in which he treats of the predisposing and exciting causes of the diseases of soldiers, and the means by which

these may be avoided or remedied,—as he is anxious to draw the attention of military officers to those subjects, which he conceives to be of very great importance to the successful employment of armies, and consequently to be well deserving the attention of officers intrusted with commands either more or less extensive.

The medical treatment of such of the diseases of soldiers as the author has observed to be most prevalent in the armies with which he has served, is given in *Notes* at the end of each chapter, for the consideration of such readers of the medical profession as may be induced to peruse his Publication, and which can be passed over by readers not of the medical profession.

Beverley, Yorkshire, }
October 25, 1819. }

PRELIMINARY OBSERVATIONS.

At several periods during the late war, sickness prevailed among our troops to such an extent, and was attended by so great a mortality, as forcibly to attract the attention of the public ; and, besides this occasional prevalence of extraordinary sickness among our soldiers, a proportion of disease far greater than is usually found to assail persons occupied in the pursuits of civil life, almost constantly existed, by which many valuable lives have been lost, and the efficiency of our armies not unfrequently considerably diminished.

In this statement I am fully borne out by the official returns of the sick of the 2d battalion 34th regiment, transmitted by me at different periods of the late war,

from which it will appear that our troops have at all times, but more especially when employed in actual service, experienced a much greater proportion of sickness than has been usually found to exist among persons employed in the civil occupations of life. It is, therefore, I conceive, very important to ascertain, from past experience, the *nature* of the diseases to which our soldiers have been found to be most subject, to investigate the *causes* of these diseases, and to endeavour to point out means by which they may be altogether avoided, or so far remedied as existing circumstances will permit.

These are the objects which I have in view in this publication ; and, although I cannot flatter myself that much will be accomplished by my unaided efforts, still I entertain a confident hope that the general result of the experience of the different medical practitioners who have served with our armies during the late war, will altogether afford *data*, by attention to

which, on future occasions, a considerable diminution of the sickness which has hitherto been found to prevail among our soldiers may be effected.

The great amelioration which has taken place in the health of our Sailors employed in the Royal Navy during the last thirty or forty years, holds out, I conceive, considerable encouragement to attempt an equally beneficial change among our Soldiers ; for, until the celebrated voyages of Captain Cook, quite as great a proportion of sickness was found to exist among our sailors as among our soldiers of late years ; but, by the humane and judicious exertions of that most excellent officer, followed up by similar exertions among all classes of the officers of our navy, sickness has been so much diminished in our ships of war, that their crews have enjoyed, during the late war, a greater share of good health than falls to the lot of even healthy communities on shore. *

* It appears from the Appendix annexed to Dr Sinclair's

Nor should we, I conceive, despair of similar beneficial results in *our armies*, if we can make it appear, as I believe we can do, that the *causes* of sickness among our soldiers are *few in number*, and that those, in most instances, can either be avoided altogether, or in great measure remedied.

In giving expression to the above observations relative to the officers of our navy, it is very far from my intention to infer any want of humane attention on the

Thesis, composed at Edinburgh in the year 1817, that, during the years 1810, 1811, and 1812, there were sent to the naval hospitals at Malta, Gibraltar, and Minorca, from our fleets employed in the Mediterranean and Adriatic, the crews of which, I imagine, could not have fallen short of 15,000 men—

*Only 595 cases of pulmonic affections,
1242 cases of fever,
and 169 cases of dysentery.*

And it is stated that the immortal Nelson preserved the crew of the *Boreas*, when under his command, in such perfect health, even in the West Indies, as not to lose a single man by death during three years. *Vide Southey's Life of Lord Nelson, Vol. I. p. 73.*

part of the officers of our army towards their sick ; on the contrary, I have myself witnessed the greatest anxiety entertained by Lord Hill, Sir William Stewart, Sir William Lumley, and General Don, to pay every possible attention to the health of the men under their command ; and, from the different commanding officers of the battalion with which I had the good fortune to serve very nearly twelve years, I invariably received all possible support, in every measure which I could point out, as likely to conduce to the good health of the corps.

Having, while in the Peninsula, always served in the division commanded by General (now Lord) Hill, which was almost constantly detached from the main army, I had not any personal opportunity of witnessing the attention of the Duke of Wellington to the sick of his army ; but I have been informed, by the best authority, that, when the troops were cantoned in the neighbourhood of the Guadiana,

in the spring of 1812, he made inquiries every day of the principal medical officer as to the appearance, or the expected appearance, of the endemic fever—expressing, at the same time, his anxious desire to remove the troops before they should be exposed to the danger of extraordinary sickness; and it is well known, that the improvement in the general hospitals, which greatly conduced to the comfort and probable recovery of many of the sick by the construction of *fire-places* in the wards, was entirely owing to the personal suggestion and direction of the Duke of Wellington.

The general result of my experience with the army is contained in the abstracts of my official returns at different periods, as given in the Appendix, from which may be collected,

1st, Those diseases to which newly raised soldiers are most subject, as exemplified in Appendix, No. I.

2dly, The diseases which prevailed on actual service in the peninsula of Spain and Portugal, as shewn in Appendix, No. II.

And, *3dly*, In the Appendix, No. III., will be found an enumeration of those diseases which occurred after the return of the 2d battalion 34th regiment from the peninsula.

The inference which must be drawn, from a due consideration of the official returns above specified, is, that almost all the sickness of our troops, when employed in actual service in the field, has arisen from *fever* of different types, and *dysentery*. This is confirmed by the official returns of the whole army serving in the peninsula from December 1811 to June 1814, as published by Sir James M'Gregor in the 6th volume of the Medico-Chirurgical Transactions.

The experience of former wars, also, af-

fords strong corroboration of the opinion that it is to *fever* and *dysentery* that the sickness of troops employed in the field is to be almost altogether attributed.

In garrison at home, the most prevalent diseases among our soldiers have been found to consist in inflammatory affections of the lungs, rheumatisms, venereals, and, of late years, purulent ophthalmia.

Having thus concisely enumerated the diseases to which our soldiers have been found to be most liable under the different circumstances of being employed in actual service in the field, and in quarters on the home stations, I shall submit to the consideration of the reader the opinions which I have formed as to the *causes* of these diseases, and the means by the adoption of which I conceive that *they may be remedied, if not altogether avoided*.

I shall commence with the *fevers* ; and under this head must be comprised, in

conformity to the systematic arrangement of authors,

1st, Intermittent fevers or agues.

2d, The remittent or endemic fevers of warm and marshy countries.

3d, Simple inflammatory fever, induced by over-excitement in removal to a warm climate, intoxication, &c.

4th, Typhus, or hospital, or jail fever.

INTERMITTENT FEVER, OR AGUE.

THESE diseases are found to prevail in all marshy undrained districts in which the temperature of the atmosphere *is moderate only in degree*, and occur most frequently in the spring and autumn.

The *exciting cause* of intermittents has been long ascertained to be the miasmata

arising from marshes. The chemical composition of these miasmata has not, as yet, been ascertained with that precision which is desirable ; but there is no doubt but that they owe their origin to the decomposition of water and of vegetable materials ; and as the exhalations from the marshes in the neighbourhood of Edinburgh were actually set on fire on one occasion, there can remain little doubt but that *hydrogen* enters into the composition of these miasmata ; and it is highly probable that *carbon* is the other constituent ; and we may safely say that the decomposition of water and vegetable materials, from which these constituents would be abundantly supplied, is requisite for the extrication of that gas, which has acquired the name of Marsh Miasmata.

The *predisposing causes* of intermittents have also been accurately ascertained ; and these consist in debility induced by fatigue or deficient nourishment, intemperance, or any other causes which reduce

the energies of the system below the standard of good health.

The means of preserving soldiers or other persons from the invasion of this disease are, therefore, very obvious; and are most certainly to be effected by avoiding as a residence all those situations in which, from the operation of the causes above stated, intermittents have been found by experience to prevail: and accurate information on this point may always be obtained from the persons who have inhabited the country for any length of time. But if it be unavoidable, that troops should be stationed in situations where intermittents are known to prevail, as was sometimes the case during the late war, every attention should be paid to obviate the predisposing causes, and to expose the men as little as possible to the influence of the exciting cause of these diseases.

With these objects in view, care must

be taken that the men are well clothed, and that they have a full proportion of animal food for their diet, with a moderate daily allowance of beer, wine, or spirits; the strength of the body and activity of the mind should also be preserved by regular exercise in the open air, and by cheerful occupation.

Over-fatigue and exhaustion from any cause, but more especially from intemperance, should be most cautiously avoided.

Exposure to the exciting causes of the disease will be greatly diminished, by placing the men in the upper stories only of houses, giving the preference to those houses which have windows and doors in the direction contrary to that in which the marshes are situated; good fires should be constantly kept burning; and the men should not go into the open air early in the morning before they have taken their breakfast; it will also be important, that

as few men as possible should be posted as sentinels, during the night, in those situations near to which the marsh miasmata arises.

The use of tobacco in such situations has been highly extolled; and it is recommended, that persons should take a dose of bark or some other *stimulant* in the morning, previous to first going out into the open air.*

* Nearly 500 cases of intermittents fell under my care in the Island of Jersey, and in the Province of the Alentejo in Portugal; and in the treatment of this disease, I have always found it necessary to premise free evacuations by *emetics*, and brisk *purgatives*, such as calomel, and the compound extract of colocynth, previous to the administration of the bark.

After the necessary evacuations had been premised, it was my endeavour to break the chain of morbid associations by administering a full dose of tincture of opium, and sulphuric æther, on the first appearance of the rigors, which denoted the approach of a paroxysm, or by giving an ounce of bark in powder, (in as large doses as the stomach could bear,) within a short period of an expected paroxysm; which by these means was frequently prevented, and when the morbid associations had been thus once broken, the prevention of the succeeding paroxysm was rendered considerably more easy by means of the repetition of the bark, the use of which

REMITTENT FEVER.

This is the endemic fever of warm climates, which have not been effectually drained ; the *exciting causes* of this disease, no doubt, arise from the decomposition of vegetable materials and water, thus resembling the exciting causes of intermittents, but it appears, that a considerably higher temperature of the atmosphere is necessary, to elicit those gases which ex-

I found it necessary to continue for some time after the paroxysms had ceased.

The arsenical solution has also proved a very efficient remedy in my hands, but I have always found the sulphate of zinc nearly or quite inert ; and, on the whole, I give the preference to the bark administered in as large doses as the stomach will retain, shortly before the paroxysm is expected, and continued for a considerable time after the paroxysms have altogether ceased to occur.

In the Alentejo, however, many cases occurred in which the disease could not be cured, so long as the patient remained in the district in which it had been contracted ; removal to a more healthy situation, therefore, became necessary, and when visceral disease was threatened as a sequela of intermittent fever, a mild course of mercury was the only remedy to be relied on, together with change of climate.

cite this formidable disease, than is required for the production of those miasmata which induce intermittents ; the disease of which we are now speaking never, I believe, making its appearance except in situations where the heat of the atmosphere exceeds in the shade 80° of Fahrenheit, at least. *

In Spain and Portugal, as in other countries where great rivers have their source in mountainous districts, very great variation occurs in the breadth and depth of the rivers, at different seasons of the year ; their streams scarcely occupying, at the latter end of the summer, and during the early part of the autumn, one third of the space over which their waters flowed dur-

* At the time remittent fevers were very prevalent at Villa Viçiosa, in the month of August 1811, the thermometer reached 88° , placed in the shade, and in a house built with extremely thick walls, and with every other precaution to preserve a moderate degree of temperature during the summer months, and I was informed that the thermometer was seen as high as 100° in the shade of an olive tree about the same time.

ing the winter and spring ; and a very extensive surface of half-dried mud and vegetable remains is thus exposed to the influence of the sun's rays, and, as these operate with great intensity at this season of the year, an abundant supply of deleterious miasmata is, by these means, produced, giving rise, beyond all doubt, to the remittent fevers which are found to prevail wherever these circumstances co-exist.

The probability, that remittent and intermittent fevers owe their origin to modifications of one agent, or to the same agent operating under different circumstances of the temperature of the atmosphere, receives strong confirmation from the fact, that intermittents were almost universally prevalent among the native inhabitants of Villa Viçiosa, in the neighbourhood of the River Guadiana, at the same time as remittents prevailed among our men quartered in that town, who were unaccustomed to the climate, and who

suffered severely, from their vicinity to the Guadiana.

The influence of those exciting causes of disease, although extremely powerful, and almost, or quite irresistible within certain limits, is not, however, extensive,* and situations may almost always be found, even in the vicinity of large rivers, where troops may be stationed without danger of serious injury from disease.

The unerring dictates of experience should be our guide on these occasions, and, by due inquiry among the well informed inhabitants of the country, we shall be able to ascertain in what situations good health may be enjoyed, and in what

Sir Gilbert Blane states, in his paper on the Walcheren fever, published in the third volume of the Medico-Chirurgical Transactions, that the miasmata of the marshes of Walcheren did not produce the slightest ill effects on the crews of the guard-ships, stationed in the narrow channel between Walcheren and Beveland, and some of them were considerably within 3000 feet of the shore. Notwithstanding, not a single case of fever occurred in any one of those ships.

districts fevers or agues have been found to prevail ; the latter should be most cautiously avoided, for I am persuaded, from what I have witnessed of this disease, that when brought within the influence of its exciting causes, it is not possible to preserve our soldiers from the most fatal consequences of its ravages.

The means of precaution recommended to be employed in situations where intermittents are found to prevail, should certainly be put in practice in those cases also ; but although these may be very useful in the prevention of the milder form of intermittents, I fear little advantage would be, at any time, derived from these or any other preventive means, in the case of remittent fever.

It is only by carefully avoiding to place troops in such situations, as afford the exciting causes of remittent fever, that their health, at the close of the summer, and during the autumn, can be preserved ; for

I am persuaded, that whenever troops are placed in such situations, great sickness and mortality will invariably ensue ; and most officers who have served in a warm climate, (that is, where the thermometer, at the end of summer, has reached, or exceeded 85° in the shade,) will recollect instances where this has occurred, and been attended with great loss of lives.

I do not wish to specify particular occasions, but am most anxious to impress on the minds of military officers the very great importance which attaches to the station of troops during the autumnal months ; for if placed on the banks of large rivers, or in the immediate neighbourhood of extensive marshes, such a degree of sickness will invariably occur as will greatly reduce the efficiency of an army, and cause a loss of very many valuable lives. And I conceive that no military considerations whatever can justify the exposure of troops to such certain destruction ; for what can compensate for

the general loss of health throughout the army?

Add to this, that, in almost all cases, situations can be found, even at no great distance from large rivers, and the most extensive marshes, in which troops may be stationed with every prospect of preserving the best possible state of health; for, as I have above stated, the exciting causes of remittent fever, although extremely powerful, and almost irresistible, within a certain range, extend only a very limited distance,—and this, I trust, will be kept in view on future occasions, as, by these means, I believe that very considerable diminution of sickness among our troops may be effected.

*Note on the Symptoms and Treatment of
Remittent Fever.*

I usually found the symptoms of the endemic fever above described to be a ve-

ry severe pain in the head, often accompanied with nausea; the temperature of the body considerably increased; the pulse frequent and full; the thirst extremely urgent; and the tongue covered with a whitish crust of mucus.

Greatly increased secretion of bile was evident from the very large quantities passed by stool; and I have seen several cases in which the whole body of the patient became of a dark yellow colour,—and the urine and serum from blisters, in those cases, tinged the linen as dark yellow as saffron could have done.

Great disturbance of the functions of the sensorium took place; and, as the autumn advanced, irritability of the stomach became the most dangerous and distressing symptom.

Extreme debility occurred at the termination of the disease, even in cases where it had been of very short duration.

Two hundred of the 34th regiment were attacked with endemic fever during the summer and autumn of 1811; but although the disease frequently assumed the continued form, it did not, in any case, appear to me to be contagious.

In my treatment of this disease, I had recourse, early in the season, to emetics, in the first instance, and these were commonly composed of the tartrate of antimony, by means of which great quantities of bile, altered from its healthy appearance, were evacuated in most cases; but as the autumn advanced, the determination of blood to the head, and great irritability of the stomach, contra-indicated the use of emetics.

Active purgatives were had recourse to *in all cases*, and the most decidedly beneficial effects were produced by their operation. I commenced with calomel and the compound extract of colocynth, six grains of each,—and if this did not purge freely in

the course of a few hours, it was followed by the supertartate of potass and jalap; or by infusion of senna with sulphate of magnesia, until free evacuations ensued. When great irritability of the stomach existed, pills, composed of calomel and the compound extract of colocynth, were the only purgative medicine which would remain on the stomach; and it was often necessary to give the saline draught in a state of effervescence to allay that distressing symptom, so as to allow any thing to remain on the stomach; but purging alone afforded permanent relief, and it was by purgatives given in sufficient doses to operate with activity, and repeated with unwearied assiduity, that the disease was conducted to a favourable termination.

In cases in which the head was much affected, leeches were applied in considerable numbers to the temples; and where those were not at hand, it was certainly expedient that blood should be abstracted

from the temporal artery, or external jugular vein : but, in the Peninsula, we had almost always leeches in great abundance.

Antimonials, combined with calomel, the neutral salts, and the most abstemious regimen, completed my usual plan of treatment, to which camphor, combined with the liquor acetatis ammoniæ, and blisters, were sometimes added in lingering cases ; but my principal reliance was on brisk and repeated purging, and local abstraction of blood from the head.

Bark was administered for the removal of the extreme debility which invariably occurred at the termination of the disease : and we generally had it in our power to obtain moderately good wine from the commissary for our convalescents.

SIMPLE INFLAMMATORY FEVER.

THIS is a disease which is, I believe,

very seldom met with in this country unaccompanied with some local affection; but we certainly witnessed disorders very nearly resembling the synocha of Dr Cullen on the first arrival of our troops at Lisbon during the summer season. These were produced by sudden change to a warm climate, exposure to the influence of the sun, and excess in wine. In all these cases, great excitement existed in the system, marked by frequent and full pulse, greatly increased heat of the body, white tongue, and very severe pain in the head, approaching, in some cases, to that intense pain experienced in phrenitis. The prevention of these complaints consisted in avoiding fatigue, or exposure to the sun's rays, and observing a moderately low diet, with abstinence from new wine. This, however, could not always be enforced; and the treatment of the disease then consisted in the strict employment of the antiphlogistic plan of treatment.

TYPHUS, HOSPITAL, OR JAIL FEVER.

THERE are few diseases more to be dreaded in their consequences than this, as it is too often attended with great mortality, and its ravages are oftentimes extended to great numbers of persons, by means of its ready propagation by contagion.

The *exciting causes* of this truly formidable disease depend on accumulation and concentration of the natural excretions of the human body, (perspiration, &c.) from neglect of personal cleanliness, and deficient ventilation, by which means the specific contagion of typhus fever is generated.

The *predisposing causes* of the disease are exhaustion from fatigue, privation of proper nourishment, or from the influence of the depressing passions of the mind; moisture, with cold, to a moderate degree,

also assists to render the constitution more susceptible of the impression of that specific contagion, by means of which the disease is propagated.

Neglect of personal cleanliness being the principal cause of typhus fever, its existence to any considerable extent among our soldiers has been of late years prevented under most circumstances.

The disease has, however, appeared in some instances, and been attended with considerable mortality; but its occurrence is, I believe, to be prevented even in crowded transports by due attention to *cleanliness* and *ventilation*, except in very unfavourable circumstances indeed, such, for example, as were experienced on the return of our troops from Corunna, where, probably, all human means were inadequate to the prevention of severe disease.

Under ordinary circumstances, the health of the men on board transports may be

preserved by constant attention to the cleanliness of their persons, the free ventilation and fumigation of the vessel, and by insisting on a certain proportion of the men being always on deck, to effect which, they should be regularly paraded, and, on the first parade, in the morning, the men should appear, in the presence of an officer, without their jackets, their shirt-sleeves being turned up over their arms, and their feet and legs uncovered, that it might be seen that those parts of the body, at least, had undergone the necessary process of ablution.

The first thing in the morning, also, the bedding should be brought on deck, opened, and exposed to the air, and the boards composing the floors of the births should be removed, and every part of the vessel be made as clean as possible by means of half-dry swabs and scrapers, the decks not being washed except in very fine weather, as, by this practice, at other seasons the decks become extremely

damp, than which nothing can be more prejudicial to good health.

During the time this is going on, all persons, women as well as men, should be kept on deck; all curtains which may have been allowed to the married people during the night for the sake of decency, must be removed in the morning, together with every other incumbrance, such as boxes, &c. that the pure air may be allowed to pervade freely every part of the vessel, the due ventilation of which will also be materially assisted by *windsails* being kept constantly in use; and it will be necessary to place centinels over them to prevent their apertures being tied together by the men, who have in general great objection to the free admission of cold air.

In addition to these means of cleanliness, fumigations of oxygenated muriatic acid gas * should be had recourse to under

* Nitrous acid gas may be procured by putting half an

any circumstances unfavourable to health, such as the prevalence of bad or wet weather, and whenever the vessels are crowded, which I conceive to be the *cause* when more men are embarked than is in proportion of two men to three tons of the ship's burthen.

The men should be divided into either two or three watches, as the ship is more

ounce of sulphuric acid into a glass, china cup, or saucer, and warming this over a lamp, or by means of heated sand, and adding to it, from time to time, some nitre. This is the process recommended by Dr Carmichael Smyth, and is best adapted for fumigating apartments in which the sick still remain, as the nitrous gas causes very little inconvenience to respiration; but I consider the muriatic acid gas, and, above all, the oxygenated muriatic acid gas, to be the most powerful agent for the destruction of contagion.

The muriatic acid gas may be obtained by putting one pound of muriate of soda (common sea-salt) into an earthen vessel, and adding a small quantity of sulphuric acid, from time to time, until the whole is moistened, assisting the extrication of the gas by a gentle heat placed under the vessel, and, if an addition is made of the black oxyd of manganese, the oxygenated muriatic acid gas will be obtained. When a vessel is fumigated with either of these gases, it will be necessary to remove the arms from between decks, or they will be much injured by rust.

or less crowded, and one watch should be kept constantly on deck, being relieved every four hours, as by this means greater space is allowed to those who are below, and all the men are in turn exposed to the healthy influence of the fresh air.

The men embarked in transports should be seen by a medical officer on one of the parades *every day*, that the appearance of disease in any may be early detected; and should any cases of fever, even of the slightest nature, occur, the men affected should be instantly separated from those in health, and sent out of the ship, if practicable; and the processes of cleanliness and fumigation above recommended enforced with increased activity and assiduity.

The men should also be encouraged to remain on deck as much as possible during the day, and their minds should be occupied by exhilarating exercise, such as running round the deck, dancing, &c. And

it will be highly important to ascertain that the women also pay due attention to their personal cleanliness.

The diet and water* should, of course, be of the best description, and this should be ascertained previously to embarkation of the troops; and when spirits are issued, care should be taken that they are mixed with a due proportion of water before given out to the men; a supply of vegetables, particularly potatoes, and also of soap, amply sufficient for all the purposes of cleanliness, will also greatly conduce to the preservation of the health of soldiers when embarked in transports; and, in case the voyage is likely to be of long duration, an abundant supply of *lemon-juice* will very much conduce to the good health of the men.

* The purity of water on board ships will be best preserved by being kept in vessels which have been charred on the inside; or perhaps still more effectually by the adoption of *iron tanks*, as lately proposed.

I have thus stated in detail the means by which, I conceive, the appearance and progress of typhus fever may be prevented in transports, as it is, I believe, when embarked, that our troops are most exposed to danger from this disease.

The same precautions as to personal cleanliness, and free ventilation of pure air, will hold good, so far as circumstances coincide, in barracks also, where it is certainly advisable that the bedding should be removed from the rooms into the open air, at least two or three times in the week; and fresh air should be permitted, on those occasions, to pervade every part of the apartments.

It would also be of advantage, that the method of cleaning the floors of the hospital, by means of dry rubbing with loaded scrubbing-brushes, as introduced by Mr Knight, lately Inspector-General of Army Hospitals, should be extended to barracks also; for it is, beyond all doubt,

“highly pernicious” to deluge the floors of barrack-rooms with water, except in fine weather, when they may become perfectly dry before the approach of night.

I would also propose, that the men should be removed from a proportion of the barrack-rooms in rotation ; that when thus unoccupied, the rooms should be thoroughly cleansed, ventilated by free admission of fresh air, night and day, and whitewashed, and in a few days afterwards the men to return to the rooms, which have been thus purified, and the rooms they quit submitted to a similar operation ; for it would be, I conceive, very conducive to good health, that every room should thus, in its turn, be freely ventilated, cleansed, and whitewashed, while unoccupied, in succession.

It would be also highly conducive to the cleanliness and health of the men, that the parade recommended when on board ship, for the inspection of personal

cleanliness, should also take place on shore at least once in the week, as this is the only means by which *real cleanliness* of the soldier's person can be ascertained, as it is external appearance of cleanliness only which is insisted on at the usual parades.

Note on the Treatment of Typhus.

Pure typhus is, so far as my experience extends, a rare disease among our soldiers ; it does, however, sometimes prevail under circumstances very unfavourable to health. The greatest number of cases of this genus of fever, which I have witnessed, occurred in the garrison of Canterbury in the winter of 1804-5. Many of these, though apparently of typhoid type, were accompanied with an inflammatory affection of the lungs ; the treatment was thus rendered extremely difficult ; for in cases where blood was not abstracted, the patient too often fell a victim to the local disease of the lungs ; and if blood was abstracted

freely for the removal of the pulmonic affection, the patient was very liable to fall into a state of debility and exhaustion, through which he could not be supported.

Under these trying circumstances, it was found to be the most prudent and successful plan, to have recourse to the lancet *once* at the commencement of the disease, for the relief of the pulmonic affection when urgent, but afterwards to lay aside the lancet, and to trust the treatment of the disease to purgatives, antimonials, and blisters.

In many cases, great debility remained at the termination of the disease, so much so, that although the fever appeared to have finished its course, still the system did not possess sufficient energy to resume its healthy functions ; in these cases, very great advantage was derived from *gestation*, as recommended by Dr Jackson ; the men, when in the state above described, were taken out into a spring waggon, and laid on a mattress ; and if in a state

of extreme debility, attended by a medical officer, with a supply of wine and cordials, and conveyed four or five miles into the country, usually over Barham Downs, and they were almost always found to revive during their excursion; broth was prepared for them on their return, which they usually took with appetite, and soon after enjoyed sound sleep, from which they awoke greatly refreshed and invigorated.

DYSENTERY.

This, above all other diseases, is the scourge of armies when employed on active service in the field; the ravages which it has committed in different armies have been handed down to us in glowing characters, which our own experience has proved not to exceed the language of truth.

It will be seen, by reference to the ta-

ble in the Appendix No II., that 119 cases of dysentery and diarrhœa occurred during twelve months, when the 34th regiment was actively employed in Spain and Portugal, and most of the cases classed under the head of diarrhœa would, in all probability, have terminated in dysentery, had not curative means been had recourse to at the first commencement of the disorder ; and it appears, from the abstract of the official returns of the whole army employed in the Peninsula, from December 1811 to June 1814, that nearly 23,000 cases of dysentery and diarrhœa occurred in that period of 31 months.

The *exciting causes* of this wide-spreading and truly formidable disease have been considered by authors of great celebrity to consist principally in the improper food used by the soldiers, and to become almost universal by the operation of *contagion*, communicated by means of the camp privies and rotten straw which had formed the beds of the soldiers ; the dis-

ease itself being considered to be dependent on a spasm of the colon, and to have a *putrid tendency*.

Such were the opinions which I entertained of the nature of this disease, when I was first called on to treat a considerable number of men attacked with dysentery, at Bandon in Ireland in the year 1807. I soon lost three or four men, and having recourse to dissection to attain satisfactory evidence of the nature of the disease to which they had fallen victims, I found such evident marks of active inflammation, as to leave no doubt on my mind but that the fatal result was to be attributed to a high degree of inflammatory action, and not to a disease depending on spasm or debility of any kind.

On this, I changed my treatment to the antiphlogistic plan, which was attended with the most decidedly beneficial result.

When I again met with this disease in

the Peninsula, the appearances which I had witnessed in Ireland were strongly impressed on my mind, and seeing no reason to imagine, from the symptoms which then occurred, that these cases depended on other causes, than those which I had previously witnessed, I had recourse to the plan of treatment which I had formerly adopted, and with the greatest possible success.

Note on the Treatment of Dysentery.

One fatal case also occurred in Ireland after our return from the Peninsula, in which most decided marks of inflammation existed.

This man was admitted with symptoms of diarrhœa, which were treated with mild purgatives frequently repeated. The symptoms, notwithstanding, became aggravated, together with tenderness of the abdomen on pressure, on which he was

twice bled from the arm with temporary relief, but the disease did not yield; on the contrary, death occurred on the tenth day.

On examination we found a considerable quantity of coagulable lymph effused on the surface of the small intestines, together with many recent adhesions between different convolutions of the upper portion of the intestinal canal, which were precisely the appearances found in the former cases, and left no doubt of the inflammatory nature of the disease.

My treatment of dysentery, both as it occurred in the 2d battalion 34th regiment, and also in the General Hospital of Joâ di Dios near Lisbon, which was placed in my charge, in the autumn of 1810, by the late Mr Bolton, Inspector of Hospitals, and which contained a considerable number (never less than one hundred) of cases of dysentery, consisted in administering, at the commencement of the disease,

small but repeated doses of mild purgatives ; and I greatly preferred a solution of sulphate of magnesia in infusion of senna, which appeared to lower the inflammatory action, and also to procure satisfactory evacuations from the bowels when administered in doses of two drachms of the sulphate of magnesia, largely diluted with infusion of senna, every four hours, for two, three, or four times : and it was necessary, in almost all cases, to have recourse to this medicine repeatedly at the interval of 36 or 48 hours ; for if this was omitted, the tormina and all the other bad symptoms returned ; but these again yielded, in a very great majority of cases, to a renewal of the purging plan assiduously persevered in.

I had recourse to venæsection in all those cases in which *tenderness was experienced in the abdomen on moderate pressure by the hand* ; and this I consider to be the criterion by which we are to have recourse to

the abstraction of blood in recent cases of dysentery.

The above, with a due attention to diet and clothing, constituted my plan of treatment in the acute stage of the disease.

I always carefully abstained from the use of *opium* in any form or combination, for I considered it to be highly deleterious in all cases of acute dysentery; and I still think so, although the contrary has been very lately given to the public as the opinion of several practitioners who had good opportunities of treating this disease.

In the chronic form of dysentery, when I fear ulceration of the intestines very often takes place, I have derived most advantage from the administration of small doses of calomel, together with the occasional use of mild laxatives, as the sulphate of magnesia *in small doses*, or castor oil; and when the patient is tormented with almost constant desire of going to the

night-chair, and when there, by most distressing tenesmus, I have very often produced a comparative state of ease and comfort, by directing an enema of starch mucilage, (not exceeding four or six ounces in quantity,) with two drachms of tincture of opium, to be thrown up two or three times in 24 hours ; and this is the only mode of administering *opium* in dysentery which I do not firmly believe to be decidedly injurious.

The appearance on dissection, and the successful treatment of the disease by the antiphlogistic plan of treatment alone, afford decisive proofs of the inflammatory nature of dysentery as I have seen it occur among our soldiers.

I entertain great doubt of the disease being propagated by means of *contagion*, for when we were near the enemy the sick were every day sent to the rear ; and notwithstanding fresh cases of dysentery continued to occur daily, which could not

have been the case had the disease been propagated from one person to another, after all those affected with the disease had been removed to a distance. Nor could the disease have been communicated by means of camp-privies, or by the straw which had formed the bedding of the soldiers, for we were seldom stationary a sufficient length of time to allow of much accumulation in the privies, and the men *never had straw or any other bedding except their own blankets.*

Besides, the first appearance of the disease was very different from that of a contagious disorder, which usually commences in a few persons only; and, extending from them to others, the cases gradually become more and more numerous, until measures are taken to arrest its progress. I have, on the contrary, always seen dysentery attack great numbers *at the very first appearance of the disease*, which must, I conceive, under such circumstances, be attributed to other caus-

es than contagion. And the diet of the men had undergone no alteration at the time I saw dysentery prevail in the Peninsula.

I invariably observed that dysentery appeared among our men after the first exposure to the rain which usually set in at the end of summer; and it is to the effects produced on the system by exposure to wet and cold immediately after great previous excitement by the stimulus of the solar heat and light, that I am inclined to attribute the origin of camp dysentery.

During the heat of summer, soldiers in camp are greatly exposed to the highly stimulating effects of the sun's rays, by which the exhalants on the surface of the body are kept in a state of high excitement. All at once this stimulus is withdrawn by the cessation of the hot weather; and, very soon afterwards, cold and moisture exert their influence with great

intensity when soldiers are exposed by night, as well as by day, to the heavy rains which almost immediately follow the greatest degree of summer heat ; and it is my opinion that the origin of camp dysentery is to be attributed to the operation of these powerful causes exerting their influence on the surface of the system in quick succession.

The means of preventing the occurrence of this disease, by which the efficiency of entire armies has been not unfrequently altogether destroyed, should, I conceive, be studied with reference to the circumstances above stated, of exposure to wet and cold immediately following great heat, considered as exciting causes of the disease.

It being quite impossible to prevent soldiers being very much exposed to the influence of the sun when encamped during hot weather, the only precautionary measures which can be adopted, with a

prospect of success, to obviate the ill effects of the sudden change from great heat and long continued dry weather, to comparative cold and wet, which is to be expected at the commencement of autumn, are the removal of the troops from the camp to houses previously to the commencement of the autumnal rains, and providing them, at the same time, with new clothing and blankets, by which means I have little doubt but that the appearance of dysentery, in an army employed in the field, may be frequently altogether prevented. *

Should circumstances render the early removal of the troops from camp impracticable, every possible care should be taken to protect the men from the vicissitudes of the season by a well-timed sup-

* In the year 1811, our army in the Peninsula was removed from the camp at Torre de Moro, on the banks of the river Caya, about the 21st of July, in consequence probably of the excessive heat which then prevailed; and, being placed in good cantonments, scarcely any cases of dysentery occurred within my knowledge at that time.

ply of clothing and blankets for bedding, together with *good tents*, before the commencement of the autumnal rains, the approach of which can be calculated without difficulty.

Good tents, warm clothing, and new blankets, certainly afford the best means, next to timely removal of the troops from camp to quarters, of preserving the health of the soldiers from attacks of the formidable disease which we are now considering.

It is also important that the meat should be prepared in the form of *soup*, as this affords the most wholesome nutriment, and also prevents the soldier from drinking *water* with his meals, which is not always of the best quality.

Unripe fruit, ill-cooked vegetables, and, in general, all food of difficult digestion, should be carefully avoided.

DISEASES OF THE LUNGS.

DISEASES of the lungs, and of the cavity in which they are contained, are among the most important, both as to frequent occurrence and fatal result, which have been found to prevail among our soldiers when employed on the home service.

Their usual age, that of youth or early manhood, and their manner of living, render newly-raised soldiers particularly liable to inflammatory diseases; and the exposure which they experience, when on duty, as sentinels, during the winter nights, alternating with the stimulation of large fires, constantly kept up in their guard-rooms, render inflammatory attacks of the lungs and pleura of extremely frequent occurrence.

In the spring of 1808, these complaints were so frequent on the coast of Sussex

and Hampshire, as almost to assume the form of an endemic.

I believe that the construction of the temporary barracks, which was not considered sufficiently to exclude the external air, nor to have as many fireplaces as were required by the severity of the season, and the prevalence of cold north-easterly winds, was generally considered to have been the principal cause of the prevalence of these disorders at that period; but I think that I traced, in almost all the cases which fell under my care, (and these were numerous, the 34th regiment being then stationed in the temporary barracks at Steyning and Chichester,) the origin of the disease to exposure when on guard; and, when we consider that the soldier usually keeps on precisely the same covering when sleeping before a large fire in the guard-room, as he is provided with during the time he is posted as a sentinel in a sentry-box in the open air, we cannot be surprised that the very great and often-

times repeated change from the heated atmosphere of the guard-room, to the cold external air, during a winter night, should induce violent pulmonic inflammation in constitutions rendered particularly liable to inflammatory affections, by the frequent use of spirituous liquors.

I have sometimes observed that the bad state of the men's shoes had very much conduced to the prevalence of pulmonic complaints.

Although I have now pointed out what I conceive to be the principal predisposing and exciting causes of these diseases, I must acknowledge that I cannot satisfactorily state how these are to be avoided. The predisposing causes are, beyond doubt, to be found in the excessive use of spirituous liquors, and this may in a great measure be prevented by well regulated discipline ; but it is still more difficult to avoid or remedy the exposure of soldiers when on duty as sentinels during the win-

ter months, nor do I well know how the great vicissitudes which they then undergo, and in which the danger, I conceive, principally consists, can be obviated, for fires in the guard-rooms cannot be denied them, and it is not, I fear, practicable to regulate their size or extent without considerable difficulty;* nor would it, perhaps, be easy to induce the men on guard to take off their great-coats when relieved from their posts, and reserve this additional covering for the period during which they are exposed to the open air, when alone it is necessary and useful; but this, if practicable, would certainly greatly diminish the ill effects of the impression of cold air on their system.

On the approach of the first winter after our return from the Peninsula, I antici-

* Since the above was written, it has occurred to me that this difficulty might be overcome by the erection, in guard-rooms, of the newly invented *stoves*, by means of which warmth is equally diffused through an apartment *by heated air*.

pated considerable sickness from pulmonic complaints, which I then apprehended would frequently occur in constitutions which had not been accustomed to the rigours of a northern winter for five years past. My apprehensions on this head were not, however, verified by the result. On the contrary, the men who had served in the Peninsula were ever afterwards, (that is, up to April 1817, when the 2d battalion 34th regiment was disbanded,) particularly free from pulmonic complaints ; and it is a fact, I think, well worthy of being made publicly known, that not a single instance of pulmonary consumption occurred in any one of the men who returned from the Peninsula, from the date of our return, in August 1814, to the reduction of the corps on the 24th April 1817.

From hence I think we may infer, that a residence for four or five years in a warm climate wears out the disposition to pulmonary consumption ; for it is scarcely

possible to imagine that this disposition did not exist in some of the many hundred men who either went out with the regiment in 1809, or were afterwards sent out as recruits.

Reasoning on these observations, it is, I conceive, highly advisable that young persons in those families in which a disposition to pulmonary consumption has been unfortunately proved to exist, by elder children having fallen victims to this unrelenting malady, should be removed to a warmer climate before the age of puberty, there to remain until they reach the age of nineteen or twenty, by which time we may entertain confident hopes that the disposition to this disease, which now proves so fatal to so many of the most highly gifted sons and daughters of the British islands, may be entirely worn out, and all danger of its occurrence in these individuals be thus averted.

Pulmonary (or tubercular) consumption,

when formed, must, I fear, still be considered *incurable*; but I entertain a sanguine hope, that its frequent occurrence may be prevented by the timely removal, to a more genial climate, of the remaining individuals of a family, one or more of whom have already fallen victims to the disease in this country.

Perhaps Italy* affords situations most favourable to the preservation of good health, under those critical circumstances, but in cases where it is highly important that the patient should be constantly surrounded by a mild atmosphere, very little

* Since the above was written, I have seen the banks of the Arno, Hières, and Villa Franca near Nice, strongly recommended in the Foreign Medical Journal as extremely favourable places of residence for invalids during winter; and the Island of Inarine, in the Bay of Naples, where cool breezes are constantly to be found, even during the most intense heats of summer is described in Bishop Berkeley's letter to Mr Pope, as a particularly desirable abode during the heats of summer.

Crete, and Valencia on the eastern coast of Spain, are also spoken favourably of in the third number of that publication.

varying in degree, The Azores (or Western Isles) will be found, I believe, the most advantageous place of residence; greater uniformity of temperature prevailing in these islands, from the circumstance of their being surrounded to such great distance by the Atlantic Ocean, as to prevent any unpleasant variation of temperature, by cold breezes off the land; *than is perhaps to be found in any other situation* neither Montpelier, Lisbon, or Madeira, being free from the objection of considerable vicissitudes in temperature, from the occasional prevalence of cold winds.

*Note on the Treatment of Inflammation of
the Lungs and Pleura.*

The attacks of these diseases in soldiers are generally well marked, being ushered in with rigors succeeded by considerable degree of fever, cough, and pain in some part of the thorax, which is invariably *increased on taking, or attempting to take, a full inspiration.* Under these circumstan-

ces, my plan of treatment consisted in abstracting, without delay, as much blood as would cause the approach of syncope, and in case any pain was felt at the end of six or eight hours *on taking a full inspiration*, the blood-letting was again repeated to similar extent; by these means relief was afforded in a great majority of cases, and little more was required, than to open the bowels by means of a saline purgative, and to keep the patient for some days on *low diet*, from which animal food was carefully excluded; but some cases were more obstinate, and required a third blood-letting, which I always had recourse to at the distance of 24 hours from the first, provided any pain was then felt on taking a full inspiration.

With respect to the quantity of blood drawn, I had two objects in view, the one to diminish the irritability of the heart by the sudden abstraction of blood, inducing an approach of syncope, and the other to withdraw from the circulation a

considerable portion of the circulating fluid, by which its exciting effects on the system might become considerably reduced.

Both these objects I found to be usually attained, by taking away about 24 or 30 ounces of blood at each bleeding; but I have long made it a rule of practice, never to allow the arm to be tied up, in cases where I consider it to be necessary that a vein should be opened, until an evident effect is produced on the heart, as indicated by the sinking of the pulse, or by the coming on of sickness at the stomach.

I have generally abstained from administering antimonials or digitalis during the first 24 or 30 hours, apprehensive that either may produce an effect on the pulse which might prove only temporary and illusory, and thus prevent recourse being again had to the *lancet*, which I consider the sheet-anchor in all those cases; and I

can with truth state, that by its vigorous employment in the commencement of inflammation of the lungs and pleura, I have treated a very great number of cases in the army, without the loss of a single patient, during the last ten years of my service.

After the blood-lettings had been repeated two or three times, I usually prescribed an antimonial and mild purgatives, and a blister to the breast, and if I had reason to apprehend that effusion had taken place, I gave calomel and opium in small doses to rouse the absorbents to increased action.

In cases of confirmed phthisis, I believe that nothing can be done but to relieve the urgent symptoms, as much as is in our power.

However, in such a hopeless disease, I think nothing should be left untried which promises even a remote chance of benefit.

I have, therefore, determined to give the hydro-syalic acid a fair trial; hitherto I have had an opportunity of administering it in a single case only, but in this I thought it was of advantage.

In the early stages of the disease, I have sometimes flattered myself that I have prevented the impending mischief by the use of the *digitalis*, together with great attention to diet and clothing.

OPHTHALMIA.

THIS disease twice prevailed to great extent in the 2d battalion of the 34th regiment, during the period of my service with that corps.

It first appeared at Colchester barracks, in the autumn of 1805, soon after the formation of the battalion, and on inquiry we found that our men occupied the same barrack-rooms, and had in use the same

bedding, as had been previously in possession of a regiment which had served in Egypt, and which still had ophthalmia among their men, at the time they occupied the apartments in which our men were afterwards placed ; we had, therefore, good reason to suspect, that the disease had been communicated to our men by contagion, and through the medium of their bedding ; but this opinion, as to the communication of the disease in the manner above stated, was greatly confirmed by the peculiar circumstances which attended the appearance of the disease in the 2d battalion 34th regiment on the second time of its occurrence : and, indeed, these have been considered by Dr Gregory as quite decisive of the question, and were so pronounced to be, by him, from the chair which he fills with such distinguished reputation, in the course of his lectures on ophthalmia in the season of 1815, when he conferred on me the honour of reading to his class the paper which I had submitted to him on this

disease, as I had seen it prevail in the 34th regiment, and to which he was pleased to add several encomiums, which, coming from such high professional authority, could not but be extremely gratifying to me.

Ophthalmia occurred for the second time, in the 2d battalion 34th regiment, in the spring of 1808, on our passage from Portsmouth to the Island of Jersey.

The corps had been previously in good health, and was perfectly free from even a single case of any affection of the eyes on its arrival at Portsmouth, into which garrison we marched from Chichester; and unless my memory fails me, we embarked on the very day of our arrival, without going into either billets or barracks at Portsmouth.

Two transports were provided for our conveyance to Jersey, the one named *Minerva*, a particularly fine vessel, of

about 500 tons; indeed, without exception, the finest transport in which I ever embarked.

In this ship, the officer commanding directed the head quarters of the corps to embark, together with the left wing of the regiment, the right wing proceeding in the other vessel.

I think we were detained two or three days at Spithead by contrary winds, and our passage, on the whole, was, I perfectly recollect, somewhat tedious.

When *at sea*, several cases of Ophthalmia appeared, and the disease extended itself with great rapidity among our men, so that, on coming to anchor in the roadstead of Jersey, a few days only after we had embarked at Portsmouth, a very considerable number of our men, together with myself, were affected with ophthalmia.

On inquiry, we found that a detachment of the Foot-Guards, among whom Ophthalmia was stated by the master of the transport to have been very prevalent, had returned to England from Sicily, in the Minerva, a short time previously to our embarkation, and, as the same bedding had been delivered out to our men as the Guards had slept in, little or no doubt remained in my mind as to the disease having been excited by specific contagion, communicated by means of the ship's bedding; and I was strongly confirmed in this opinion by my own case, for my bedding having been by mistake sent down to the hold, together with the heavy baggage, the master of the transport represented to me that it would be attended with considerable trouble to have it brought up from thence, which would be avoided by my making use, during the short time I remained on board, of a mattress and blankets belonging to the ship, and, having sheets in my portmanteau, I consented to this arrangement, and the

consequence was, that I was the only officer embarked in the Minerva who was attacked with the disease.

Another proof of the disease having been highly contagious, was afforded by the officer who came on board the Minerva to report to the commanding-officer the arrival of the companies embarked in the other vessel, for, although he did not remain on board our ship longer than ten minutes or a quarter of an hour, *he contracted the disease.*

Moreover, when it is taken into consideration that the men composing the right and left wings of the corps had been placed in circumstances precisely similar, in every respect, up to the very moment of their embarkation in two vessels, in one of which ophthalmia appeared *at sea*, and extended, in a few days, to nearly one half the number of the men who had been embarked in that ship, while all those embarked in the other ship remained entire-

ly free from the complaint, with the single exception of the officer who came on board the *Minerva*,—every one, I imagine, must admit, with Dr Gregory, that I have adduced decisive proofs of the *contagious nature* of this disease.

With a view, therefore, to prevent the progress of ophthalmia, wherever it might make its appearance, I would strongly recommend the instant separation of all those either affected with the disease, or who may be reasonably suspected to have been exposed to the influence of the contagion, from those in undoubted health.

In all cases where the disease has made any progress, *the bedding should be destroyed*, and the bed-rooms thoroughly fumigated with oxygenated muriatic acid gas, ventilated, and whitewashed, all the men being previously removed.

It is also of importance, to keep this disease in check, as well as with a view to

personal cleanliness, that the large barrack-towels, intended for common use, should be altogether disused, and every soldier be provided with a sponge and towels for his separate use.

I cannot, however, point out the different means by which I think that the progress of ophthalmia may be prevented better than by detailing the measures which were had recourse to on the arrival of the 34th regiment at Jersey, in the year 1808, when this disease was rapidly extending itself among the men composing the left wing of the regiment, as the precautions then adopted not only received the approbation of Mr Knight, at that time Inspector-General of Army Hospitals, but also proved so eminently successful as to effect the total eradication of ophthalmia from the corps in the short space of a few weeks, and without the loss of vision in a single instance.

On landing at Jersey, the right wing of

the regiment was permitted to proceed to its destination, Grouville Barracks ; but the left wing was placed in camp, in a situation where all communication with the men composing the right wing was cut off by a cordon of sentinels.

The whole of the ship's bedding was landed on the rocks, and *burnt* by order of General Don, in the presence of a board of health, composed of a field-officer of the garrison, Staff-Surgeon Cossins, and myself ; and the Minerva was afterwards thoroughly cleansed, fumigated with oxygenated muriatic acid gas, and whitewashed, under our superintendence.

These means proved successful, as far as I could afterwards learn, in eradicating the lurking contagion from the ship, as well as in arresting the progress of the disease among our men ; and such are the measures I would strongly recommend to be adopted on all similar occasions, for I am persuaded, that when the disease has made

any considerable progress, it will seldom or never be altogether put an end to, until all the bedding in which any men affected with ophthalmia have slept, has been *entirely destroyed* ; and, if this is not successful in putting a stop to the prevalence of the disease, the men in health should be removed to *camp* ; and, when all farther danger of the appearance of ophthalmia is prevented, *the tents*, and other articles, as well as the bedding, by means of which contagion can be communicated, should be destroyed.

Note on the Treatment of Ophthalmia.

I first saw the Egyptian Ophthalmia at Colchester barracks, in the autumn of 1805, and the disease appeared to have been communicated to the men of the 34th regiment by the barrack bedding, which had previously been in use by a regiment which served in Egypt, and had

brought home the ophthalmia of that country.

The plan of treatment which I adopted was the strictly antiphlogistic plan,—bleeding, purging, cold collyria, low diet, and the exclusion of strong light ; but as the disease did not readily yield to this plan of treatment, I afterwards adopted that recommended by Mr Joberns, Deputy-Inspector of Hospitals, then at Colchester, who had served with the army in Egypt, and there witnessed the disease in all its worst forms. This consisted in injecting into the eye a weak solution of sulphate of copper and camphor, with Armenian bole, the repeated application of blisters to the forehead, and the internal use (after brisk cathartics) of the cinchona in powder, with the oxymuriate of mercury in doses of one-eighth part of a grain in solution, twice in the day. The use of the injection of sulphate of copper, although painful at the moment, produced almost immediate relief, and, by adhering

to the plan of treatment above described, I lost only one eye in a very considerable number of cases.

It is here worthy of remark, that the men at that time affected with ophthalmia had invariably a low, weak, easily compressible pulse, with the temperature of their bodies reduced below the standard of good health ; and it having been suggested by a high authority, about this period, that want of success from use of the lancet was to be attributed to its not being used with sufficient energy, I determined to carry the abstraction of blood as far as was practicable, to ascertain whether or not this was really the fact ; and not long afterwards I had a favourable opportunity of bringing this opinion to the test of a decisive experiment ; for, keeping in view the opinion that my former bleedings had not been sufficient in quantity, I resolved to allow the blood to flow until complete syncope was induced, and, in the case to which I allude, this was not pro-

duced until forty-four ounces of blood had been abstracted; the man then said that he felt sick, and I immediately tied up his arm; but a state of suspended animation ensued for several minutes, which alarmed me exceedingly; and I have seldom felt more happy than when I was able to excite sneezing by the introduction, up the nostril, of a feather wetted with *spt. ammoniæ*. Notwithstanding all this, the eye received no benefit from the evacuation of blood, and was afterwards very tedious in recovering. On the other hand, the ophthalmia which occurred in the *Minerva* transport, on our passage to the island of Jersey, in the spring of 1808, and which was no doubt communicated to our men by the bedding used by the Guards on their return from Sicily, bore all the marks of an active inflammatory disease;—strong hard pulse,—almost intolerable pain,—heat of the skin,—white tongue, and urgent thirst;—and general blood-letting, together with purgatives and cold collyria, here effected a speedy and certain

cure, in every case, without exception. And the left wing of the regiment, (which arrived in the Minerva, and to which the disease was altogether confined,) having been placed *in camp*, and the curative means above stated being had recourse to, without delay, in every case, the disorder was eradicated from the regiment in the course of a very few weeks, and I have the satisfaction to say, without a single case of blindness having occurred. But a similar disease having about the same time occurred in the 2d battalion of the 47th regiment, in St Ouin's barracks, on the other side of the island of Jersey, it was not so soon eradicated, and towards autumn a marked change took place in the symptoms, and this was thought to have occurred immediately after a violent storm of thunder, when the weather became very hot and sultry, and the disease would no longer yield to the usual antiphlogistic remedies.

In consequence of the experience which

I had acquired in the treatment of purulent ophthalmia, I was directed to visit the hospital of the 2d battalion of the 47th regiment, and to give my opinion as to the best mode of treatment to be adopted. I there found, that men who had been admitted on the very day on which I made my visit, had feeble, easily compressible pulse, and cold extremities, as I had observed among our own men in the autumn of 1805, and, recollecting the circumstances which then occurred, as detailed above, I had no hesitation in recommending a similar plan of treatment as was then adopted ; and I believe that this was attended with considerable success.

When I reflected on the very great difference which appeared in the constitutional affections, at one time denoting greatly increased arterial action, and at the other period denoting both diminished action of the heart and arteries, and also diminished nervous energy, I could not but feel disposed to be of opinion

that the disease was greatly modified by external circumstances, probably by the difference of the seasons of the year, so as to require very different treatment.

Whenever the disease put on a chronic form, I found that the seat of the disease was principally in and about the tarsi, the conjunctiva lining the eyelids having frequently become fungous and granular; and it was not possible to effect a cure until this state of the conjunctiva was effectually destroyed, either by the knife or caustic. I never had recourse to the scissors, consequently cannot speak as to the comparative advantages which they possess over the knife, but I found that the knife would answer the purpose very well, and that in most cases the daily application of the nitrate of silver would also destroy the granular state of the conjunctiva lining the eyelids, the irritation produced by which evidently keeps up the disease, and greatly endangers vision.

VENEREALS.

THE prevalence of complaints of this nature may be, in some measure, kept in check by a weekly inspection of the men by a medical officer, and by attention to effect a cure in such females as might be the means of propagating the disease.

An improved state of the morals of our soldiery would be, however, a far more effectual means of preserving the health of the men from cases of this nature, and it is to be hoped, that this may be accomplished in time of peace, more effectually than could be done during the war, when the influx of men of every description of character was so great.

Note on the Treatment of Syphilis.

My practice in these cases was to place all men whom I discovered to have ulce-

ration of the penis, not precisely of the character of undoubted chancre, as described by Mr Hunter, in bed, and on low diet, directing mild local applications, and occasional purgatives, until I could determine, to my own satisfaction, whether or not the disease was really syphilitic ; many cases of superficial ulceration yielded to this plan of treatment, but when the ulcers did not heal, or at least visibly improve, in the course of a few days, I had recourse to *mercury*, most commonly directing half a drachm of the strong mercurial ointment to be rubbed in on the inside of the thighs every night. I very rarely had recourse to the internal use of mercury in primary affections, and I very seldom ordered more than half a drachm of the ointment to be used in 24 hours, as by the use of that quantity I almost always succeeded in affecting the gums to a slight degree within a week or ten days ; the moment this effect was produced, the ointment was discontinued, and again had recourse to, at the end of three or four

days, either every night or every other night, so as to keep the constitution under the influence of mercury until the ulcers healed, and the hardness produced by the chancres was removed, and for ten days or a fortnight afterwards, always taking care not to push the mercury so far as to induce any farther effect than *tenderness of the gums*, if it could be avoided, using mild laxatives, alum gargles, &c. if the mercurial action became by accident any way excessive.

In the treatment of the secondary symptoms of syphilis, I give the preference to the oxymuriate of mercury administered *in solution* and in small doses, together with which I often prescribe the compound decoction of sarsaparilla.

I have found, not only the great majority of cases of syphilis which it has fallen to my lot to treat, but, with very few exceptions, *all those cases* do extremely well under the cautions and moderate use

of mercury, as above described ; I should therefore still recommend a similar mode of treatment of primary syphilitic affections, although I am well aware that, in general practice, very many cases of ulceration of the penis have been treated with mercury quite unnecessarily ; and that, in other cases, some practitioners have administered mercury in syphilis in a way which was neither requisite,—nor, by its excess, by any means free from danger.

In addition to this, it is incumbent on me to state, that I attentively witnessed in the Castle of Edinburgh, during the summer of 1817, the treatment of many cases, considered to be syphilitic, *without mercury* ; and I must always consider myself much obliged by the politeness I then experienced from Dr John Thomson, and by the facilities which he afforded me of personally examining the men under his treatment, although he was quite aware that I did not coincide in his views of the subject. And, notwithstanding all I then

saw, and the information which I have derived from other sources, some of them highly respectable, I am yet of opinion, that, all things considered, it is best for the patient that mercury should be had recourse to (cautiously and moderately administered) for the cure of primary syphilitic affections, except only in such cases of peculiarity of constitution as threaten greater danger from the remedy than from the disease; and I think that the public will be indebted to the military practitioners, who have lately introduced the practice of treating primary syphilitic affections without mercury,—for the knowledge of the fact that syphilis, left to run its natural course without interruption from the establishment of the mercurial action, and controlled only by rest in bed, topical applications, the warm bath, &c. is, in many cases, by no means so fatal or formidable a disease as it was generally apprehended to be previous to the publication of Dr Fergusson's paper

on syphilis, in the 2d volume of the Medico-Chirurgical Transactions.

From what I saw at Edinburgh Castle, in 1817, I conceive, that syphilitic affections, treated without mercury, and continuing to run the natural course of the disease, will be found to consist in chancre, bubo, sore throat, probably iritis, and to terminate in eruptions; and the question now appears to me to be, Whether it is better to trust syphilis to the chance of running this course, or to cut the disease short by establishing the mercurial action?

We are told that, in a majority of cases, the primary ulcers will heal (perhaps in two, three, or six weeks) without the occurrence of any secondary symptoms; but it must be admitted, I conceive, that, in all cases of true syphilis treated without mercury, there is danger of the occurrence of secondary symptoms, and, I believe, in the order above described. At

the same time, it is but right to state, that I think that there is good reason to suspect that the affections of the *bones*, which were formerly considered to be venereal, will be found to have been induced by the excessive use of mercury.

Before quitting the subject of the treatment of syphilis, it may be as well to state, that I long made it a rule of practice not to open a bubo, either by the knife or caustic, except in very rare cases; and I thought I saw great advantage obtained for the patient by abstaining from so doing.

My experience of sloughing, gangrenous, and phagedenic ulcers, has not been sufficiently extensive to enable me to add any thing new on these subjects.

SMALL-POX AND COW-POCK.

I INVARIABLY had recourse to the ino-

culation of the cow-pock in all the children, and in such of the men, also, respecting whom there was the smallest possible doubt as to their having previously undergone one or the other of these diseases, from the time of my entering the service, in 1801, up to the period of the reduction of the 2d battalion 34th regiment, (on which I was placed on half-pay,) in April 1817; and I can truly say, that I never met with, during these sixteen years, or since, a single case of disappointment, or any untoward accident whatever, from the practice of vaccination.

I was, however, duly attentive to the progress of my cases of cow-pock. I again and again had recourse to inoculation, until a vesicle of the specific character of vaccina was produced, and which proceeded, through all its changes, with strict regularity, and without being unduly accelerated in its course; and, in some rare cases, in which I entertained doubt as to the constitution being affected, I had re-

course to the test recommended by Mr Bryce of Edinburgh, which consists in inoculating the patient on the fifth day of the disease, with virus taken from the vesicle then going forward in the individual ; and, in case the constitutional affection is really going on, the vesicle produced by the second inoculation will, by the tenth day, have overtaken the first, and both will, at that time, exhibit similar appearances. And I think, that *one vesicle* should be allowed to run its course undisturbed by having virus taken from it ; for I believe it has happened, that disappointment has occurred from the circumstances of all the virus having been abstracted for the purposes of inoculation. Unless precautions of this kind are properly attended to, there can be no doubt but that frequent disappointments may arise ; for it is quite evident, that the susceptibility of the constitution to undergo small-pox cannot be destroyed by the mere act of inoculation, or by the establishment of a merely local disease ; nor, perhaps, by

even a constitutional affection not strictly regular as to extent and duration.

It is, therefore, only a matter of surprise to me when I consider how many incompetent persons have (from the best of motives, no doubt) undertaken the superintendence of vaccine inoculation; and how little attention has been paid by some medical practitioners after inoculation, that a great many more reported instances of the failure of the cow-pock have not been brought forward.

I can declare, that I have never seen a single case of small-pox after cow-pock,—but I do not intend to deny that such instances may not occur, for it is well established that small-pox has occurred more than once in the same individual; and if the constitution of some persons is susceptible of small-pox more than once, there can be no reason why persons possessing similar peculiarities of constitution should not experience small-pox af-

ter cow-pox, as well as they might have been affected by small-pox *more than once*.

SIMULATED DISEASES.

SOLDIERS of bad character will often feign diseases, either to obtain the indulgence of indolence by remaining in hospital, or to procure their discharge from the service.

A great degree of attention is sometimes required from medical officers, on their first commencing the treatment of the diseases of soldiers, to distinguish between real and feigned disease; and, to discriminate on these points, is highly important, as a medical officer is bound equally by the dictates of humanity, as well as by the conscientious discharge of his military duties, to afford every indulgence and comfort to a soldier really suffering from ill health. At the same time,

it is also a duty incumbent on him to prevent the humane regulations established for the benefit of the sick soldier from being enjoyed by the idle dissembler of disease. Attention, however, to the *history* and progress of diseases suspected to be intentionally excited, together with accurate information as to the previous character and disposition of the individual, will, in most cases, very soon enable a diligent practitioner to distinguish between cases of real disease, and those which are feigned.

Formerly, it was ulcers of the legs, which were most usually produced by artificial means by soldiers of bad character, and disposed to malingering. In these cases, it is very easy to prevent repetition of the application of the escharotic substances by which it is intended that the ulcers should be kept open, by carefully applying a bandage rolled round the entire foot and leg, and affixing a seal on the upper part of it, by which means it becomes im-

practicable for the soldier to make any application to the ulcer without breaking the seal, which will, of course, expose him to certain detection.

I regret, however, that it is not in my power to point out equally certain means of preventing the species of malingering which has of late years been introduced into the army, (I mean the artificial production of *sore eyes*,) but unfortunately some men of notorious bad character are acquainted with substances, which it is, I fear, quite impossible to keep out of their reach, by which irritation in the eyes can be kept up as long as they please. I have had reason to suspect, that even the salt provided with their broth has been applied to this purpose, and have taken care that it should be mixed with their broth previously to being sent to the ophthalmic ward, over which it is always advisable to place a sentinel to prevent both communication with persons in the hospital labouring under other diseases, and al-

so to prevent the admission of any improper articles of food. But there is still another substance which has been, I believe, sometimes used for the purpose of keeping up disease in the eyes; but as I cannot point out any means by which this can be kept even from patients in an hospital, I shall not particularize it, lest, by so doing, I may, by possibility, be the cause of extending a knowledge of the means of artificially exciting disease, while it is my most anxious desire to add only to the means of improving the health, and adding to the advantages and comfort, of the deserving soldier.

GENERAL OBSERVATIONS.

HAVING pointed out, in the preceding pages, the predisposing and exciting causes of those diseases which I have found to be most prevalent in the armies with which I have served, and the means by which I conceive these may be avoided or

remedied, it is now my desire to draw the attention of the reader to several circumstances, by attention to which, I believe that a very considerable portion of that tendency to disease, which almost constantly existed among our troops during the late war, may be obviated, and the efficiency of our armies thus be considerably augmented.

Selection of Recruits.

The first object to be attended to, with a view to render an army efficient, is the proper selection of recruits; and, in the first place, perhaps we should do well to take into consideration the most proper age at which recruits should be admitted; and here I must give it as my opinion, formed on observation and experience, that it is very prejudicial to the efficiency of an army to admit lads or very young men, for these are not only unequal to the fatigues of war, but their constitutions not

being as yet firmly established, they are almost certain to suffer greatly from change of climate, and to become sickly even in the ordinary course of service; and I am persuaded that a corps or army would be very considerably more healthy and efficient if all men under twenty were excluded, and recruits admitted of forty or forty-five years of age; for it is quite certain that a man of forty-five is much better able to encounter fatigue, and is also less liable to sickness, than a lad of seventeen or eighteen.

In point of height also, a deviation from the usual practice might be made, I think, with considerable advantage, for I have often observed, that very tall men became much less efficient on actual service, than either men of moderate or low stature. A well marked instance, exemplifying the truth of this opinion, occurred during our retreat to the frontiers of Portugal, in the year 1811, when our men suffered much from want of bread, on which occasion, the

grenadier company became so entirely exhausted, that I was forced to administer laudanum and æther to many of them, as a temporary stimulus, until bread could be procured, while the men of the battalion companies were enabled to move on without my assistance; and whenever fever has prevailed, I have observed that the mortality was greater in proportion among the grenadiers, than in any other company; from all which I infer, that the standard for recruits might be somewhat lowered without any detriment to the efficiency of the army, provided boys were altogether excluded, except for particular service.

Another material consideration is the education and usual occupation of the recruits, and the preference is, no doubt, due to those who have been employed in agricultural pursuits, or as *out-door* manufacturers, rather than to the inhabitants of large cities, who have been occupied in sedentary employments only.

The conformation of the recruits should be particularly attended to, especially the form of the chest, which should be deep and expanded, the body not too long, and the limbs robust and muscular, and these are points particularly to be attended to in very tall men, who should be rejected, unless they have a capacious well formed chest, and robust muscular limbs.

Any man with organic defects, or appearing to have faulty conformation, or appearing to be subject to constitutional disease of any kind, most particularly consumption or scrofula, should be decidedly rejected; and the perfect use of all the limbs must, of course, be insisted on.

Diet of Soldiers.

The diet of soldiers is an object of primary importance. The materials of which it is composed should be of the best quality; and the mode in which these are

cooked are well worth minute attention. If the meat is *broiled*, as sometimes has been the case on service, very little nourishment is afforded, and recourse is invariably had to the water which happens to be within reach for drink, which is oftentimes of bad quality, and very little is gained by a meal of this kind ; on the other hand, if the meat is made into good soup, a comfortable and wholesome meal is afforded without the necessity of any other beverage for drink than the broth.

For several campaigns, the French troops had greatly the advantage over our men, in the facility with which they cooked their rations, as was pointedly observed in general orders issued by the Duke of Wellington ; but after the large iron camp-kettles had been exploded, and much lighter kettles introduced, our men's cooking was effected in much less time, and they became latterly *expert cooks*, making their soup of very good quality,

by addition of meal of any kind which could be procured, or rice, and such vegetables as were within their reach, together with *salt*, which they preserved with the greatest care ; and, indeed, it was only when deprived of this condiment, that I was fully aware of the greatness of the privation ; and, if salt was included in the soldiers' rations when fresh provisions are issued, it would be of great advantage to the soldier.

I imagine that greater importance attaches to the circumstance of the soldier being provided with a good warm breakfast, than has generally been supposed to be the case ; and on this point I must acknowledge, that I have found more than one military officer difficult to be convinced. There can be, however, no doubt but that a wholesome breakfast is very conducive to the good health of the soldier ; and I have seen the proportion of sickness in a corps greatly and suddenly diminished by the establishment of break-

fast mess, which should be as regularly conducted as dinner mess.

The very best materials for a soldier's breakfast is, I conceive, oatmeal porridge with milk, a pint of which may be usually provided, at the expence of less than one penny, by boiling two ounces of oatmeal and four ounces of milk with a sufficient quantity of water, to which sugar or salt may be added, and an excellent meal is thus afforded, at an expence certainly within the soldier's reach.

When milk and oatmeal cannot be procured, coffee or cocoa may be substituted; but the broth which remains from the preceding dinner by no means answers the purpose, as it usually becomes *sour* in warm weather.

I doubt much if beer of the quality which is supplied for the one penny per day allowed as beer-money, adds either to the good health or comfort of the soldier.

Clothing.

The clothing of soldiers is a subject of very considerable importance in the preservation of good health ; and a great improvement has, beyond all doubt, taken place in the soldier's clothing of late years. The jackets and cloth trowsers worn on service appear to me not to admit of further improvement, and great-coats have been furnished of excellent quality for some years past ; indeed, the only part of the soldier's dress which has appeared to me to be defective is the article of *shoes*, which I have often seen supplied of very inferior quality, so bad, indeed, as frequently to be rendered altogether unserviceable after a single day's march ; and the only way in which the shoes supplied by contract, when we were in the Peninsula, could be rendered of any service, was by having them made over afresh. For this, time was not always afforded, and the consequence was, that our

men suffered great inconvenience, being sometimes compelled to substitute sandals made of fresh hides for shoes, which proved very insufficient ; and it would certainly have conduced very much to the soldier's advantage that he should have paid an additional sum for well-made shoes, of good and seasoned materials, than have been furnished with shoes of a different description *gratis*.

At one period I considered flannel shirts as very likely to conduce to the preservation of the health of the soldier when employed on actual service. But, when I saw how badly shirts of this material were washed by the soldiers, who had not always a supply of soap, nor any other convenience for washing than the running streams, I suspected that flannel so imperfectly washed might itself become a source of disease, and, consequently, I recommended that its use might be discontinued.

*Clothing to be supplied at proper Seasons of
the Year.*

The period of the year at which new clothing is supplied to the troops, is a circumstance which may have powerful influence on the preservation of their health. I must say, that I do not think that the period at which the new clothing is now issued to the men, is that best calculated for the preservation of health, as the old clothing becomes so much worn during the two or three months preceding Christmas, at which time the new clothing is now put on, that the men may suffer very much from want of warm clothing at that inclement season of the year ; and it has always appeared to me that the additional warmth afforded by the new clothing is by far of the greatest advantage to the men at the end of summer ; consequently, if the new clothing was issued during the summer, the forage-jackets could be worn in the hot weather, and the red jac-

kets brought into use as soon as the hot weather ceased, at which time additional clothing may be the probable means of preserving the men from severe attacks of dysentery, rheumatism, and other diseases.

Soldiers not to be sent on Foreign Service until completely formed.

The efficiency of an army will, I conceive, be much increased if men are not sent on foreign service until they are completely formed and instructed on every point of discipline and internal economy ; for, unless this is done, numbers alone will add but little to the efficiency of an army. Together with the usual military instruction, I conceive that recruits should be instructed in cooking, packing their necessaries with dispatch, erecting tents, constructing huts, and, if practicable, to repair their clothing and shoes, and to wash their linen.

Troops to be sent on Foreign Stations at the Season of the Year most favourable to good Health.

After soldiers have become *fit for service*, in the full sense of the expression, it is of very great importance that they should be sent to foreign stations at that season of the year which is most favourable to the preservation of good health. A deviation from this rule has *very lately* been attended with such fatal results in the West Indies, as will, I trust, draw the attention of the military authorities to this very important consideration.

Reinforcements to an army on actual service should, I conceive, be sent out very early in the spring, when they may, by degrees, become inured to the fatigues and privations of service; certainly not towards the autumn, at which season a very large proportion will soon find their way into hospital.

And when it is necessary to send troops to a tropical climate, it is certainly expedient that they should arrive at the most temperate season of the year, that their constitutions may gradually become assimilated to the climate.

Site of Camps.

The good health of an army will be very much affected by the judicious selection of places of encampment.

Camps should be situated, whenever it is practicable, on dry soil, and on rising ground, but still supplied with good running water, and with wood for fuel; and particular care should be taken that the camp is not exposed to the deleterious influence of large rivers or extensive marshes, which would certainly produce the worst possible effects on the health of the soldiers, most especially on the approach of autumn.

I have lately read, in the Second Volume of the Dublin Hospital Reports, a strongly marked instance of erroneous judgment in the selection of ground for an encampment, and other instances will present themselves to the memory of most officers of experience. I do not, however, wish to adduce particular instances, but, as the case I now allude to has been already published, there can be, I conceive, no impropriety in referring to it, but, on the contrary, I hope that the experience of the past may be of no small advantage in future.

Mr Proudfoot, formerly assistant surgeon of the 27th regiment, states, at page 256 of the second volume of the Dublin Hospital Reports, when treating of the endemic fever of Carthagen, that, on the appearance of fever in that city in the year 1812, an order was given, that the troops should withdraw from the barracks, and encamp under the Fort of Galleras, where “ they were exposed, not only more di-

rectly to cold during the night, but also to the influence of the effluvia from the marsh, as there was generally, towards evening, a breeze from the land, *which crossed the marsh, and conveyed the miasmata to Galleras.*”

The consequence was a great proportion of sickness and mortality, to which both the general officer commanding, and the senior medical officer, appear to have fallen victims; but I trust their example will not be afforded in vain.

Whenever it is practicable, soldiers on service should certainly be supplied, not only with blankets, which are absolutely necessary for the preservation of good health,* but also with *tents*, which we found, during our last campaign in Spain, did not require greater means of convey-

* Until I saw it tried, I was not aware that a *good blanket* would turn a whole night's rain, but I have often found that such is the fact, and hence their very great importance to a soldier on actual service.

ance than the heavy camp kettles, (one mule per company,) the light kettles being carried by the men, and the advantage derived in the diminution of sickness among the troops, will amply compensate for this incumbrance to an army whenever circumstances will permit it to be provided ; and when tents are provided, care should be taken, that a trench should be dug round each on arrival on the ground of encampment, for, without this precaution, a considerable quantity of water will find its way into the tents, in the event of rain, which would have been effectually excluded by a trench round the tents, an inch or two only in depth.

When unprovided with tents, we used, in the Peninsula, to construct *huts*, and in this our men became, at length, extremely proficient.

The plan pursued was to select a tree (generally a cork tree or an evergreen oak) which had wide-spreading branches,

a lower branch was then nearly cut through so as to allow the extreme points to drop to the ground ; other branches were then cut from adjoining trees, and fixed in the ground, so as to form nearly a circle of sufficient dimensions placed nearly upright, and with the upper branches resting on that branch of the tree under which the hut was to be constructed, and which had been dropped towards the ground. Smaller branches were then interwoven to thicken the walls of the hut, which was afterwards lined on the inside with the broom plant, in the manner of thatching. Care being taken that the door of the hut should have an aspect of nearly *due east*, so that the sun might pass over, before it reached the horizon ; a very agreeable residence was thus provided during *the day*, but which was extremely cold during the night, and in this way, I believe very prejudicial to health. Tents, therefore, should always be provided for the soldiers, unless forbidden by the nature of the service on which they may be employed, in

which case, an abundant supply of good new blankets will be found their best substitute.

Barracks.

The site and construction of barracks is a subject of great importance to the preservation of the good health of the soldier.

Barracks should be erected only in situations which have been found by experience to be favourable to good health.

The soil on which they are constructed should be *dry*, the situation moderately elevated, and the aspect in this country south or south-east, and the neighbourhood of large rivers and of marshes should be cautiously avoided.

In the construction of barracks, I think that the comfort of the men is best con-

sulted by their rooms not being of too great size ; rooms calculated for eight or twelve men being, I conceive, by far the most comfortable : these should be well ventilated, by means of Count Rumford's ventilators, which consist of double panes of glass in the window frames, one of which does not reach to the frame below by about an inch, and the other, in like manner, not extending to the frame above, so that pure air is allowed to enter the apartments without the possibility of a current of cold air, which is certainly dangerous.

Rotatory ventilators should also be placed over the doors, so as to allow the air which has been contaminated by respiration to escape without difficulty ; and the soldiers' apartments might be heated on scientific principles, with much more comfort to themselves, and much less expence to the public than at present.

The barrack-rooms should be cleaned

by means of loaded scrubbing-brushes, and only washed with soap and water when the weather is favourable ; and I have no doubt but that great advantage would be derived from the barrack-rooms being left unoccupied for a few days in regular succession, and then well cleansed, the walls whitewashed, and the apartments most freely ventilated, by all the doors and windows being left open for two or three days and nights.

Barrack Bedding.

The barrack-bedding should be taken out into the open air, and freely exposed to its influence, at least two or three times in the week, whenever the weather will permit ; and no clothes should be allowed to be washed or hung up to dry in the barrack-rooms, proper sheds being provided for this purpose, and also for the use of the men when cleaning their appointments.

Personal Cleanliness.

Personal cleanliness is highly conducive to good health under all possible circumstances. To secure this most desirable object in the case of soldiers, it is, I believe, necessary that they should be seen by an officer of each company, once in the week, without their shoes and stockings, and also without their jackets and stocks, and with their shirt-sleeves turned up over their arms, for it is by this means alone that real cleanliness of the soldier's person can be ascertained; at the same time, a medical officer should make an inspection of health, whenever venereals, or any other disease is prevalent in a corps, as directed by the regulations.

It is almost unnecessary to state, that an abundant supply of *soap* is indispensably necessary for the purpose of cleanliness. I have been, however, occasionally placed in situations on foreign service, where considerable difficulty existed in

providing the soldier with this most necessary article.

Exercise.

Regular exercise in the open air, particularly if accompanied with grateful occupation of the mind, is one of the very best preservatives of good health, and this can be easily afforded to soldiers in almost all situations.

It has been remarked, that the health of a ship's crew has undergone great improvement when in pursuit of an enemy. A strongly marked instance of the powers of mental excitement, and the spirit of enterprise, to resist the usual exciting causes of disease, occurred in the expedition to Arroyo Molinas in Spain, under the command of General (now Lord) Hill in the winter of 1811. The troops moved out of excellent cantonments in Portugal about the 20th of October, the weather having

been previously extremely fine for a very considerable period, but the very first night we went into bivouac under the shelter of a few olive trees, the autumnal rains commenced ; notwithstanding we advanced every day towards the enemy, who was overtaken after several forced marches, by which we had actually outmarched one of the most active corps of the French army, which was encountered and overthrown on the 28th October, the rain, at that time, descending in torrents, as it had done all the preceding night, which we passed en bivouac *without fires*, to prevent the enemy being acquainted that we were in their immediate vicinity ; and we had previously passed a night during our march without fire, from want of fuel.

Notwithstanding all this, and that we immediately afterwards undertook a march of seven days, back to our cantonments at Portalegré, encumbered with a considerable number of prisoners during ex-

tremely bad weather, fewer cases of disease occurred during the fortnight these active operations were going on, than in any other period of the year; and I felt no small gratification in being able to assure General (now Lord) Hill, in reply to his anxious inquiries relative to the health of the troops then acting under his immediate command, that such was the fact; nor did any case of disease occur after we had again returned to winter quarters, which could be attributed to the exposure and fatigue which the troops had undergone on the expedition to Arroyo Molinas except a few cases of rheumatism, so conducive to good health is exercise and the exciting passions of the mind.

And the non-appearance of dysentery, after exposure in bivouac to the equinoctial rains on this occasion, can, I conceive, be satisfactorily accounted for, by the circumstance of the state of high excitement into which the exhalants on the surface of the men's bodies had, no doubt,

been brought, by the stimulus of the sun's rays, when in camp, having been removed by a residence of two or three months in quarters previously to the expedition to Arroyo Molinas.

Payment of Balances.

For many years I invariably observed, that, although I had succeeded in reducing the number of the sick, so as, in many instances, almost to empty my regimental hospital in the early part of the month, that the sick again became more numerous than they ought to have been, immediately after the payment of the balances which became due to the men on the 24th of each month; and that the payment of these balances was the efficient cause of this periodical increase in the number of sick, I have long entertained no doubt whatever; and of the truth of this opinion, every one must be convinced, who has often witnessed the circum-

ces which attend the receipt of these monies, and who reflects on the consequences which must ensue.

Whenever the monthly balances have amounted to their usual sum, and have been paid to the men, I have almost always found that a great majority of them have indulged in drinking to excess for several days afterwards, especially in Ireland and the islands in the Channel, and as they generally give the preference to ardent spirits (which are very cheap in the countries above mentioned) on these occasions, the injury done to their health is very great; and they are for some time afterwards in a state which predisposes them to severe disease on being exposed to very slight exciting causes.

No doubt can be entertained, but that it is very desirable to put a stop to those irregularities which are induced by the command of money, which is afforded by the receipt of those balances, but consi-

derable difficulty may be experienced in doing so with perfect justice to the soldier.

The purchase of superior articles of equipment will sometimes answer the purpose of diminishing the monthly balance, and then be attended with the desired effect; but this cannot, I believe, always be done, and I have often thought, that, if the men who had money due to them at the end of the military month, were supplied during the ensuing month with a moderate daily allowance of good ale or porter, to the amount of their balance, that it would conduce very much to their health and comfort.

But could *banks for savings* be established in regiments, I conceive, that the soldiers may be persuaded to place their money in them to accumulate until they may receive their discharge, by which means great injury to their health and morals would be prevented; and a fund establish-

ed, which would be attended with the greatest possible advantage to themselves, when the time shall arrive at which they are entitled to retire from the army.

Morals of the Soldiers.

The habits of intemperance which our soldiers too generally acquire, being, as I conceive, among the principal causes which predispose them, in a very high degree, to acute and inflammatory diseases, it is to the correction of these habits, so injurious to good health, that we must look forward as the most effectual means of preventing the frequent occurrence of disease in our armies.

An improved state of discipline can alone effect this most desirable object; and it has been with feelings of most sincere gratification that I have, of late years, witnessed the progress of great improvement in this most important point.

The introduction of solitary imprisonment as a substitute for the mode of punishment previously adopted on all occasions beyond those of a most trivial nature, has, I believe, produced a great amelioration in the moral character of our soldiery ; but much remains yet to be done to elevate their morals to that height of correctness which they should attain ; and this, I conceive, can only be effected by improvement in their *education*, and by instilling into their minds well-grounded moral and religious sentiments.

Religious Instruction.

Whether this could not be best effected by the re-appointment of *chaplains to regiments*, I must leave to others, who possess greater influence than myself, to determine. Contenting myself with having thrown out a suggestion, the completion of which I really believe would be attended with very great advantage, both to our

soldiery themselves, and ultimately to the country,—and although it might have been quite impracticable to have procured a sufficient number of well-conducted clergymen for each of the numerous regiments which existed during the last war,—I cannot but think that the reduced number of regiments might *now* be supplied with duly qualified chaplains, with the aid which may be derived from the half-pay list of the chaplains of the army and navy.

It is by no means my wish to depreciate the usefulness of the chaplains of late employed with the army ; but it must be evident to every one how few opportunities can be afforded to a chaplain of a garrison, or of a division of an army, to become personally acquainted with the characters of either the officers or men, so as to be enabled to extend his beneficial influence beyond the mere reading of prayers, and a sermon on Sunday ; while a chaplain, permanently attached to a corps, would

become intimately acquainted with the character of every individual intrusted to his charge, so as to have it in his power to exercise his ministerial office at those moments of sickness and distress in which every one is open to, and requires the aid of, the consolations of our religion.

It may, I hope, be asked without impropriety, why it is, that our soldiers, who have devoted their lives to the service of their country, should be deprived of a religious instructor and friend, which is secured to every other class of our community? And it also might be asked, if dangerous consequences to the state might not ensue, at some future period, from the prevalence of fanatical opinions among our soldiery, to the introduction of which, when employed on the home station, they have been found to be very much exposed, from not having any authorized person among them to whom they could look up for attention and well-grounded religious instruction.

But these remarks may be considered as not coming within the scope of this publication. They will not, however, I trust, give offence, as they are assuredly well-meant; and I shall now proceed towards the conclusion of these pages, with a few observations which may be considered as more intimately connected with the subject of my inquiry.

Medical Staff of a Regiment.

The *medical staff* of a regiment—and here it must be almost superfluous to state, that the health of a corps must be very much affected by the ability and industry of the person who has charge of the sick; and it is very essential that he should possess as much zeal for the service, or *esprit de corps*, as will counteract the love of ease so far as to render him desirous of retaining the sick of his regiment under his own treatment, whenever this may be practicable, in preference to

sending them to a general hospital, where they would cause him no further trouble.

The assistant-surgeons should be young men of good education, and well disposed to improve themselves by practice, and possessing a disposition to exert themselves to the utmost to assist their principal in the zealous performance of his various and important duties.

Military Hospital.

During a campaign on actual service, additional medical aid will be required for the care of the sick and wounded ; and, from all I have seen on service, I believe that this would be best afforded by the appointment of a staff-surgeon, with one or more assistants, as circumstances might require, to each *brigade* of the army, and the establishment of *brigade-hospitals*, under their superintendence, at some short distance from the rear of the army, and

on the route by which the supplies are forwarded, to which such of the sick and wounded as could not with propriety be allowed to remain in the regimental hospital should be removed.

This plan would, I conceive, embrace many advantages, and few more striking than that of acquaintance with the characters of the soldiers under treatment, and frequent personal intercourse between the surgeon of brigade and the regimental surgeons.

Men very severely wounded, but whose cases would admit of removal, and men suffering under disease of long standing, or of a character not likely to yield to remedies, in a moderate space of time, should, I think, be sent home, with as little delay as possible, from the brigade-hospital, by which means, not only great expence would be saved, but the incumbrance of large hospitals would be altogether avoided ; and with this I should hope great deteriora-

tion of the soldiers' moral character, which has sometimes taken place in these circumstances, where a spirit of idleness and malingering has too often prevailed.

And many valuable lives would, I have no doubt, be preserved by an early removal from the seat of war to England; and I conceive that the sick and wounded soldiers would be much more likely to recover their health sufficiently to return to their military duties at the dépôt of their regiment in England, than in a general hospital on any foreign station.

General hospitals may, however, still be necessary on service under many circumstances; but, could the removal of the sick and wounded from the brigade-hospitals to their regimental dépôts in England, (which should, I conceive, be established at or near that part of the coast which may be most convenient for the transfer of inefficient men from the regiments, and of efficient men to the regiments,) the ge-

neral hospitals would become, in fact, only depôts for the temporary accommodation of the great body of sick and wounded on their route from their regiments to their regimental depôts, and which would, no doubt, be attended with very great advantages.

Cases requiring operations of difficulty, and others not in a state to bear removal to England, will, however, still remain subjects of general hospitals, where that superior medical or surgical assistance which they may require could be best afforded to them.

Duties of Regimental Surgeons in the Field of Battle.

It was my intention to have subjoined some observations on the duties of medical officers attached to regiments in the *field of battle*, but Staff-Surgeon Millingan, (with whom I served in the Peninsula,

when he was surgeon of the 31st regiment,) having announced the intended publication of a "Manual for Military Medical Officers on Active Service," I do not think it necessary to carry my intentions on this point into execution ; and I shall now bring the observations to which I am anxious to draw the attention of military officers and of medical practitioners serving in the army to a conclusion.

A desire having been expressed by several of the medical professors, who are considered to be the highest professional authorities, that I should give to the public the result of my observations on the means of preserving the health of soldiers, as collected during my service with the army during sixteen years, I have felt it to be a duty incumbent on me to do so ; and should the deserving soldier and his Majesty's service obtain any advantage in consequence of my publication, it will afford me very great satisfaction.

FINIS.



APPENDIX.

No. I.

Shewing the Diseases which occurred in the 2d Battalion 34th Regiment, from May 1805 to August 1808.

Diseases.	Admitted.	Discharged cured.	Discharged from the regiment.	Sent to other hospitals.	Dead.	Remaining in hospital August 1808.
Continued fever,	295	282		5	7	1
Intermittents,	189	188				1
Abscess,	2	2				
Ophthalmia,	279	279				
Inflammatory sore throats,	11	11				
Putrid sore throats,	2	2				
Inflammation of the lungs and severe catarrh,	180	178			2	
Inflammation of the bowels,	1				1	
Inflammation of the liver,	2	2				
Rheumatism,	25	25				
Measles,	5	5				
Erysipelas,	2	2				
Nettlerash,	1	1				
Spitting of blood,	2	2				
Pulmonary consumption,	6				6	
Piles,	3	3				
Dysentery,	83	61		18	2	2
Diarrhœa,	332	332				
Paralysis,	1		1			
Epilepsy,	2		1	1		
Cholera morbus,	10	10				
Mania,	1		1			
Carry over,	1434	1385	3	24	18	4

Diseases.	Admitted.	Discharged cured.	Discharged from the regiment.	Sent to other hospitals.	Dead.	Remaining in hospital August 1808.
Brought forward,	1434	1385	3	24	18	4
Diseased glands of the mesentery,	1				1	
Dropsy,	6	3			3	
Scrofula,	3	1	1			1
Venereals,	248	243	1			4
Jaundice,	2	2				
Loss of vision,	1		1			
Incontinence of urine,	1	1				
Herpetic eruptions,	3	3				
Ulcers,	123	120				3
Caries of the tibia,	1		1			
Fracture of the skull,	1					1
Wounds, contusions, and subluxations,	54	53				1
Punished,	129	127		1		1
Aneurism of the aorta,	1				1	
Excessive intoxication,	9	8			1	
Anchylosis,	1					1
Poisoned himself,	1	1				
	2019	1947	7	25	24	16

REMARKS.

During the period included in the above table, (from May 1805 to August 1808,) the 2d battalion 34th regiment was employed on the *home station*, in England, Ireland, and the island of Jersey, except for a few weeks in the winter of 1805-6, when we were employed on actual service, under the command of Lord Cathcart, in the north of Germany, during which time scarcely any sickness, and only one *death* from disease, occurred.

The men stated to have been sent to other hospitals were left in Ireland when the regiment left that country in 1807.

No. II.

Shewing the Diseases which occurred in the 2d Battalion 34th Regiment, on actual Service in Spain and Portugal, during the Year 1811.

Diseases.	Remaining Jan. 1. 1811.	Admitted.	Total.	Discharged cured.	Sent to other hospitals.	Dead.	Remaining Dec. 31. 1811.
Continued and remittent fever, -	2	298	300	177	120	2	1
Intermittents, -	18	233	251	81	164	1	5
Ophthalmia, -		53	53	32	21		
Putrid sore throat,		1	1	1			
Rheumatism, -		29	29	19	10		
Catarrh, - -	1	4	5	2	2		1
Dysentery and diarrhœa, - -		119	119	90	28		1
Dropsy, - -		2	2	1	1		
Venereals, -	1	30	31	3	22		6
Jaundice, - -		2	2	2			
Loss of vision, -		1	1		1		
Epilepsy, -		2	2		2		
Suppression of urine,		1	1	1			
Worms, - -		3	3	3			
Excessive fatigue,		1	1			1	
Ulcers, - -	4	52	56	47	8		1
Punished, -	1	15	16	14	2		
Various slight diseases,		24	24	16	7		1
	27	870	897	489	388	4	16

REMARKS.

During the period included in the above Table, the 2d battalion 34th regiment was actively employed in the field, in Spain and Portugal.

The men stated to have been sent to the General Hospitals were removed to the rear of the army, in consequence either of the enemy being in the immediate neighbourhood, or from the circumstance of the regiment being about to march from one place to another.

No. III.

Shewing the Diseases which occurred in the 2d Battalion 34th Regiment, during the Twelve Months immediately subsequent to the return of the Regiment from actual Service in Spain and Portugal.

Diseases.	Admitted.	Discharged Cured.	Sent to other Hospitals.	Dead.	Remaining in Hospital 31st July 1815.
Continued Fever,	79	66	5	1	7
Intermittents,	4	3			1
Ophthalmia,	36	24	10		2
Inflammation of the Lungs and severe Catarrh,	99	89	9		1
Rheumatism,	27	18	2		7
Dysentery and Diarrhoea,	75	73	1	1	
Venereals,	221	173	24		24
Ulcers,	82	71	5		6
Punished,	40	40			
Various slight Diseases,	83	77	4		2
	746	634	60	2	50

REMARKS.

Whenever the number of sick in the hospital of the regiment at Dublin exceeded fifty, they were sent to the Royal Military Infirmary, our hospital accommodation being limited to that number.

